Regeneration of the mammalian inner ear sensory epithelium.

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Public Summary:

Scientific Abstract:
PURPOSE OF REVIEW: This review will focus on 'self-repair' of the mammalian inner ear sensory epithelium, including recruiting the in-situ proliferation and differentiation of endogenous cells at the damaged site and the autologous transplantation RECENT FINDINGS: Self-repair refers to a favorable structural and functional outcome of damaged inner ear sensory epithelium. Our advanced ability of manipulating the fate of inner ear sensory cells makes in-situ proliferation a possible candidate of hearing restoration. A practical alternative of the unavoidable immune rejection is to introduce autologous cells. Ependymal cells, induced pluripotent stem cells, and olfactory neuroepithelial cells have been recognized as promising sources, which will spur ongoing efforts to evaluate these new cell sources for cell replacement therapy. SUMMARY: Further exploration of the innate advantages of in-situ proliferation and use of novel cell sources for autologous transplantation may serve as rehearsals for clinical trials in the near future.